

pedition, they would possibly come under *centervillensis* Tryon.

GONIDEA ANGULATA Lea var.

Chino Creek, near Ontario (R. H. Tremper, April, 1911). The specimens are somewhat like a small form of *G. a. haroldiana* Dall, but are more produced in front.

PISIDIUM ROPERI Sterki.

Abundant in Dry Lake, north slope of San Gorgonio Mountain, alt. 9050 feet (S. S. B., Aug., 1913). The specimens were determined by Mr. Vanatta. Those from lower altitudes previously reported as *P. californicum* Newcomb MS. are perhaps the same.

THE ANATOMY OF LEMIOX RIMOSUS (RAF.).

BY A. E. ORTMANN.

LEMIOX RIMOSUS (Rafinesque) 1831 = MICROMYA CÆLATA (Conrad) 1834. See: Simpson, Synops. Nai., 1900, p. 525, and Descr. Catal. Nai., 1914, p. 34.

Lemiox rimosus Frierson, NAUTILUS, 28, 1914, p. 7.

I collected this species at the following localities: Holston River, Turley Mill, Grainger Co., and Mascot, Knox Co., Tenn.; North Fork Holston River, Hilton, Scott Co., Va., and Rotherwood, Hawkins Co., Tenn.; Clinch River, St. Paul, Wise Co., Va., and Clinton, Anderson Co., Tenn.; Powell River, Combs, Claiborne Co., Tenn. At the latter locality, a gravid female was found on Sept. 12, 1913 (with glochidia).

Anal and supraanal openings separated by a moderately long mantle connection, which is somewhat shorter than the anal, and considerably shorter than the supraanal. Anal with fine papillæ, branchial with large papillæ. Palpi with the posterior margins connected at base only. Gills of the usual Lampsiline structure; inner lamina of inner gills entirely connected with abdominal sac, but often there is a short slit posteriorly (not more than one-fourth of the length of the abdominal sac).

Marsupium of the Lampsiline type, located in the posterior section (less than one-half) of the outer gills, kidney-shaped;

leaving a small posterior part of the gill non-marsupial. There are about 12 ovisacs on each side in my gravid female.

In the female, the mantle margin in front of the branchial opening has the inner edge nearly parallel to the outer. The outer edge is denticulate posteriorly (corresponding to the denticulate margin of the shell). The inner edge has, just in front of the branchial, a few small papillæ, and then it is lamellate and elevated, and rather smooth. Farther in front, there are again a few small papillæ. This differentiated part of the inner edge reaches nearly to the middle of the lower margin. The lamellar elevation is very distinct, and sharply defined from the anterior and posterior papillate part, and is slightly longer than either of them, and, in the specimen at hand, somewhat thickened, with a blunt edge (of course, the specimen is contracted by the action of the alcohol; it is probable that this edge was capable of some sort of expansion). In the region of the lamella, the inner edge of the mantle is farthest remote from the outer, but not much so, and there is no sudden drawing apart of the mantle edges (as in the genus *Truncilla*).

In the male, the female structure of the inner mantle is indicated in a rudimentary condition: the papillæ are extremely small, and the smooth lamellar part is present, but thin and hardly elevated.

Color of the soft parts whitish. Edges of mantle brownish, blackish in the region of the anal and branchial, and the outer edge is spotted black and brown in this region, chiefly in the female. A black streak runs along the inside of the inner edge in front of the branchial, extending, in the female, upon the lamellar elevation, which is entirely black. Edge of marsupium pale (without black pigment).

Glochidia subovate, higher than long. L. 0.21, H. 0.26 mm.

The genus *Lemiox* is a Lampsiline form with very peculiar shell characters, the most remarkable of which is the sculpture of the posterior part of the shell by rugose wrinkles, which produce, in the female, a distinctly, but irregularly, denticulate or scalloped margin of the shell. The postbasal expansion of the female shell is rather small, but distinct, and corresponds, in its location, to the lamellar expansion of the inner mantle edge.

Beak sculpture distinctly double-looped, consisting of three to four bars, the first one or two bars subconcentric. According to the soft parts, this genus belongs in the group of *Lampsilinae* which have a differentiated mantle edge in front of the branchial; but with regard to the particular structure of this edge, it is unique, in having papillæ as well as a short, elevated lamella. It is not very closely allied to *Lampsilis*, which has a large and long mantle flap, but stands nearer to the *Eurynia*-type, and possibly most closely to *Carunculina* (recte: *Toxolasma* Raf.), and we might regard the short lamella of *Lemiox* as analogous (or possibly even homologous) to the "caruncle" of *Carunculina*. But it cannot be united with the latter on account of the shape of the lamella, and the sculpture of shell and beaks (it differs also by the nearly complete connection of the inner lamina of the inner gills).

Simpson placed the species with *Micromya* (now a subgenus of *Eurynia*), but the structure of the mantle edge as well as the shell is distinctly different.

There is no question that this form should be regarded as the representative of a distinct generic type, *Lemiox*, and that it should be placed in the vicinity of *Eurynia* and *Toxolasma* (= *Carunculina*).

In the denticulations of the edge of the shell, there is some resemblance to the genus *Truncilla*, but there is no considerable space between the edges of the mantle, as in that genus, and also in other characters, *Lemiox* is entirely different from *Truncilla*.

NEW SUBSPECIES OF VIVIPARUS AND CAMPELOMA.

BY H. A. PILSBRY.

VIVIPARUS CONTECTOIDES IMPOLITUS n. subsp.

The shell is heavier than *confectoides*, rough and with irregular growth-lines and wrinkles, and often somewhat malleated; shoulder more conspicuous; and on the last whorl the bands are obsolete. The umbilical perforation is very narrow or closed. Length 39, diam. 31.5 mm. Type no. 66701 A. N.